

REMARKS

Status of the Invention.

This invention relates to phenol oxidizing enzymes obtained from *Stachybotrys*, polynucleotides that encode the phenol oxidizing enzymes, vectors and host cells comprising said polynucleotides, recombinant methods for expressing the encoded enzymes, and cultures of *Stachybotrys* strains. The application is subject to restriction, and Applicants elected claims drawn to phenol oxidizing enzymes.

Status of the Claims.

With entry of the instant amendment claims 3, 6 - 17 and 57 - 63 are pending in this application. Claims 1, 2, 4, 5 and 56 and non-elected claims 18 - 55 are canceled. Claims 3, 6 - 14, 57 and 58 are amended to more particularly point out and distinctively claim the invention. Claims 59 - 63 are newly added. New matter has not been added by the claim amendments. As an appendix hereto Applicants have provided a marked-up version of the amended claims and an index on the status of all claims. Applicants reserve the right to file further continuation and/or divisional applications on any subject matter disclosed in the application but not presently claimed.

Claim 3 has been rewritten as an independent claim and incorporates the limitations of original claims 1, 2 and 5. Claims 6 and 7 have been amended to depend from claim 3. Claims 8 and 9 have been rewritten in independent form. Claims 10 - 14 have been rewritten in independent form incorporating the limitation of original claims 1 and 2 and further identifying the phenol oxidizing enzyme as obtained from *Stachybotrys* species *parvispora* or *chartarum*. Claim 57 incorporates the limitation of canceled claim 56, and claim 58 is now dependent on claim 57. New dependent claims 59 - 63 further limit the *Stachybotrys* to either *S. parvispora* having MUCL accession number 38996 or *S. chartarum* having MUCL accession number 38898.

Objections

Applicants acknowledge that informal drawings have been filed with the application and that formal drawings will be required when the application is allowed.

The Examiner has objected to claim 2 alleging that it fails to further limit claim 1. Both claim 1 and claim 2 have been canceled from the present application.

Rejections under 35 U.S.C. §112, first paragraph

Claims 1 - 14 and 56 - 58 have been rejected under 35 U.S.C. §112 first paragraph. The Examiner states,

"the specification, however, only provides a single representative species of said enzyme that is a phenol oxidizing enzyme natural to *Stachybotrys* MUCL 38898, having the amino acid sequence of SEQ ID NO: 2. The specification fails to describe additional representative species of the phenol oxidizing enzyme by identifying structural characteristics or properties other than activity of oxidation of aromatic OH group, for which properties no predictability of structure is apparent."

The Examiner has also rejected claims 1 - 14, 15, 17 and 56 - 57 because allegedly the specification does not provide enablement for any phenol oxidizing enzyme having any substrate specificity that might be obtainable from any species of the genus *Stachybotrys*.

Applicants' claims recite a phenol oxidizing enzyme obtained from *S. parvispora* or *S. chartarum* wherein the phenol oxidizing enzyme is capable of modifying the color associated with a dye or colored compound.

While only the amino acid sequence of a phenol oxidizing enzyme obtained from MUCL 38898 is taught in the disclosure, Applicants have described the production of phenol oxidizing enzymes from both *S. chartarum* and *S. parvispora* and reference is made to example 4. Further the purification of phenol oxidizing enzymes from culture broths of these strains is disclosed in example 5. Moreover characterization of the enzymes and their properties are described in further examples in the specification. These include determination of isoelectric point (example 6), determination of pH (example 7), bleaching of various dyes (example 9), bleaching of stains (example 12) and immunological properties (example 10). Applicants contend the written description requirement has been fulfilled and that the claims are enabled by the specification

Rejection under 35 U.S.C. §102(e)

The Examiner has rejected claims 1, 2, 4, 5, 13, 14 and 56 as anticipated by Bolle et al., (USP 6,072,025). Claims 1, 2, 4, 5, and 56 have been canceled, and the amendment to claims 13 and 14 obviate the present 102(e) rejection.

Double Patenting Rejections

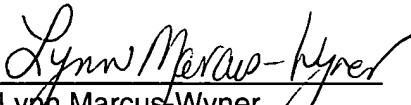
Applicants acknowledge the non-statutory double patenting rejection of claims 1 - 15, 17 and 56 -57 over claims 1, 2, 3 of copending Application No. 09/218,702 and further the Examiner's statement that a timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome the actual or provisional rejection.

Further Applicants acknowledge that the Examiner has made a "same invention" statutory type double patenting rejection of claim 15 as claiming the same invention as that of claim 3 of copending Application No. 09/218,702.

Applicants respectfully defer any further discussion on the double patenting rejections until there is agreed upon patentable subject matter in the present application.

Based on the amendment and remarks provided herein Applicants respectfully request the withdrawal of all rejections and the allowance of claims 3, 6 - 17, and 57 - 63 is kindly solicited.

Respectfully submitted,


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MARKED-UP VERSION OF THE AMENDED CLAIMS

3.(Once amended) [The phenol oxidizing enzyme of Claim 1] A purified phenol oxidizing enzyme obtained from a *Stachybotrys chartarum* or a *Stachybotrys parvispora*, wherein said purified enzyme exhibits an increase in apparent molecular weight after boiling, as determined by SDS-polyacrylamide gel electrophoresis and is capable of modifying the color associated with a dye or a colored compound.

6.(Once amended) The phenol oxidizing enzyme of [Claim 1] Claim 3, wherein the *Stachybotrys parvispora* has MUCL accession number 38996.

7.(Once amended) The phenol oxidizing enzyme of [Claim 1] Claim 3, wherein the *Stachybotrys chartarum* has MUCL accession number 38898.

8.(Once amended) [The phenol oxidizing enzyme of Claim 1 having] A purified phenol oxidizing enzyme obtained from *Stachybotrys*, wherein said phenol oxidizing enzyme comprises at least one antigenic determinant in common with a phenol oxidizing enzyme [obtainable] naturally produced from *Stachybotrys parvispora* MUCL accession number 38996 as measured by an immunoprecipitation line by Ouchterlony technique.

9.(Once amended) [The phenol oxidizing enzyme of Claim 1 having] A purified phenol oxidizing enzyme obtained from *Stachybotrys*, wherein said phenol oxidizing enzyme comprises at least one antigenic determinant in common with a phenol oxidizing enzyme [obtainable] naturally produced from *Stachybotrys chartarum* MUCL accession number 38898 as measured by an immunoprecipitation line by Ouchterlony technique.

10.(Once amended) [The phenol oxidizing enzyme of Claim 1] A purified phenol oxidizing enzyme having an apparent non-denatured molecular weight of about 38 kD [or] as determined by SDS-PAGE, wherein said purified enzyme is obtained from *Stachybotrys parvispora* and is capable of modifying the color associated with a dye or colored compound.

11.(Once amended) [The phenol oxidizing enzyme of Claim 1] A purified phenol

oxidizing enzyme having an apparent non-denatured molecular weight of about 30.9 kD [or] as determined by SDS-PAGE, wherein said purified enzyme is obtained from *Stachybotrys chartarum* and is capable of modifying the color associated with a dye or colored compound.

12.(Once amended) [The phenol oxidizing enzyme of Claim 1, further characterized by] A purified phenol oxidizing enzyme having a pH optimum of from 5.0 to 7.0, inclusive as determined by incubation for 2 minutes at 20 degrees C with ABTS as substrate, wherein said purified enzyme is obtained from *Stachybotrys parvispora* and is capable of modifying the color associated with a dye or colored compound.

13. (Once amended) [The phenol oxidizing enzyme of Claim 1, further characterized by] A purified phenol oxidizing enzyme having a pH optimum of from 6.0 to 7.5, inclusive, as determined by incubation for 2 minutes at 20 degrees C with syringaldizin as substrate, wherein said purified enzyme is obtained from *Stachybotrys parvispora* and is capable of modifying the color associated with a dye or colored compound.

14.(Once amended) [The phenol oxidizing enzyme of Claim 1, further characterized by] A purified phenol oxidizing enzyme having a pH optimum of from 7.0 to 9.0, inclusive, as determined by incubation for 2 minutes at 20 degrees C with 2,6-dimethoxyphenol as substrate, wherein said phenol oxidizing enzyme is obtained from *Stachybotrys parvispora* and is capable of modifying the color associated with a dye or colored compound.

57. (Once amended) [The] An enzyme composition [of Claim 56 wherein said] comprising a phenol oxidizing enzyme which has at least 65% identity to the phenol oxidizing enzyme having the amino acid sequence as disclosed in SEQ ID NO: 2.

58.(Once amended) The enzyme composition of [Claim 56] Claim 57, wherein said phenol oxidizing enzyme has the amino acid sequence as disclosed in SEQ ID NO: 2.

INDEX OF CLAIMS

1. Canceled

2. Canceled

3.(Once amended) A purified phenol oxidizing enzyme obtained from a *Stachybotrys chartarum* or a *Stachybotrys parvispora*, wherein said purified enzyme exhibits an increase in apparent molecular weight after boiling, as determined by SDS-polyacrylamide gel electrophoresis and is capable of modifying the color associated with a dye or a colored compound.

4. Canceled

5. Canceled

6.(Once amended) The phenol oxidizing enzyme of Claim 3, wherein the *Stachybotrys parvispora* has MUCL accession number 38996.

7.(Once amended) The phenol oxidizing enzyme of Claim 3, wherein the *Stachybotrys chartarum* has MUCL accession number 38898.

8.(Once amended) A purified phenol oxidizing enzyme obtained from *Stachybotrys*, wherein said phenol oxidizing enzyme comprises at least one antigenic determinant in common with a phenol oxidizing enzyme naturally produced from *Stachybotrys parvispora* MUCL accession number 38996 as measured by an immunoprecipitation line by Ouchterlony technique.

9.(Once amended) A purified phenol oxidizing enzyme obtained from *Stachybotrys*, wherein said phenol oxidizing enzyme comprises at least one antigenic determinant in common with a phenol oxidizing enzyme naturally produced from *Stachybotrys chartarum*. MUCL accession number 38898 as measured by an immunoprecipitation line by Ouchterlony technique.

10.(Once amended) A purified phenol oxidizing enzyme having an apparent non-denatured molecular weight of about 38 kD as determined by SDS-PAGE, wherein said purified enzyme is obtained from *Stachybotrys parvispora* and is capable of modifying the color associated with a dye or colored compound.

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14.(Once amended) A purified phenol oxidizing enzyme having a pH optimum of from 7.0 to 9.0, inclusive, as determined by incubation for 2 minutes at 20 degrees C with 2,6-dimethoxyphenol as substrate, wherein said phenol oxidizing enzyme is obtained from *Stachybotrys parvispora* and is capable of modifying the color associated with a dye or colored compound.

15. A purified phenol oxidizing enzyme obtainable from *Stachybotrys* and having at least 65% identity to the phenol oxidizing enzyme having the amino acid sequences as disclosed in SEQ ID NO: 2.

16. The phenol oxidizing enzyme of Claim 15 which has the amino acid sequence

disclosed in SEQ ID NO: 2.

17. The phenol oxidizing enzyme of Claim 15 wherein said *Stachybotrys* includes *S. parvispora*, *S. chartarum*, *S. kampalensis*, *S. theobromae*, *S. bisbyi*, *S. cylindrospora*, *S. dichroa*, *S. oenanthae* and *S. nilagerica*.

18 - 56. Canceled

57.(Once amended) An enzyme composition comprising a phenol oxidizing enzyme which has at least 65% identity to the phenol oxidizing enzyme having the amino acid sequence as disclosed in SEQ ID NO: 2.

58.(Once amended) The enzyme composition of Claim 57, wherein said phenol oxidizing enzyme has the amino acid sequence as disclosed in SEQ ID NO: 2.

59. The purified phenol oxidizing enzyme of Claim 9, wherein the phenol oxidizing enzyme naturally produced from *Stachybotrys chartarum* MUCL accession number 38898 has the amino acid sequence shown in SEQ ID NO: 2.

60. The purified phenol oxidizing enzyme of Claim 10, wherein the *Stachybotrys parvispora* has MUCL accession number 38996.

61. The purified phenol oxidizing enzyme of Claim 11, wherein the *Stachybotrys chartarum* has MUCL accession number 38898.

62. The purified phenol oxidizing enzyme of Claim 13, wherein the *Stachybotrys parvispora* has MUCL accession number 38996.

63. The purified phenol oxidizing enzyme of Claim 14, wherein the *Stachybotrys parvispora* has MUCL accession number 38996.